REMARKS

The Examiner has repeated his rejection of claim 1, 2, 4, and 5, all of the claims under consideration in this application under 35 U.S.C. 112 first paragraph. It is his position that "the specification is silent regarding a substantially continuous nonwoven thermoplastic polyphenylsulfone substrate." The Examiner's position is not well taken.

The specification at paragraph 0024 recites "One thermoplastic resin that meets these requirements is polyphenylsulfone, otherwise known as PPSU. PPSU is a translucent thermoplastic material... One preferred PPSU material is Radel PPSU available from Solvay Advanced Polymers, LLC." The specification continues for example at paragraph 0027 disclosing that the PPSU substrate is softened at about 500°F, the mold is heated to soften the substrate material (paragraph 0030), molten PPSU resin (paragraph 36, etc.). The specification also describes how the molten PPSU encapsulates the fibers (see for example paragraph 0030 and paragraph 0035). Most telling is paragraph 0036 in which it is stated that "molten PPSU resin making up the substrate material 74 is introduced from an extruder... At the same time, a sheet layer of fibrous material 72 is unrolled from a roller onto the molten layer...The calendar roll stack...presses the fibrous material sheet layer and molten layer to a desired thickness, therein impregnating the PPSU resin within the fibrous material 72..." (underlining ours).

The drawings which are done to Patent Office requirements show the resinous non-fibrous nonwoven state of the substrate 74 and as well the woven ("weaved fibrous material") 72.

The PTO has in the MPEP (§608.02) and elsewhere detailed how drawings are to be prepared. Thus fabric is illustrated by irregular free hand shading to bring out the proper effect.

The applicants have identified an example of a "thermoplastic resin" suitable for use in the invention, i.e., PPSU, i.e., Radel available from Solvay Advanced Polymers, LLC.

The drawings are explicit disclosure and they show a substrate which is not a fabric, i.e., specifically a nonwoven fabric since as known fabrics can comprise fibers bonded, interlaced or otherwise provided in sheet form. The substrates of the invention are thermoplastic materials molten and formed by molding or extruding into layers. This is described in the specification and illustrated in the drawings.

The specification is addressed to the skilled in the art and clearly conveys to them that the applicants have invented the subject matter as claimed. In re *Smith and Hubin*, 481 F.2d 910, 178 USPQ 620 (C.C.P.A. 1973). The test for sufficiency of support is whether the disclosure of the application reasonably conveys to the artisans that the inventors had possession at that time of the later claimed subject matter. *Vas-cath Inc., v. Mahurkar*, 935 F.2d 1555 19 USPQ2d 1111 (Fed. Cir. 1991).

The rejection under 35 U.S.C. 112 should be withdrawn.

The Examiner has rejected claims 1, 2, 4 and 5 as unpatentable (35 U.S.C.103(a)) by Tsotsis in view of Gomez.

The Tsotsis products are "liquid molded fabric composites" (title). The products comprise interlayers of a spunbonded, spunlaced, or mesh fabric introduced between non-crimped layers of unidirectional reinforcing fibers to produce a preform for use in liquid-

molding processes to produce composite materials. It is noted that Tsotsis uses the term "non-woven" throughout the published application, as for example at page 1, paragraph 0008: "Non-woven interlayers made of spunbonded spunlaced or mesh fabric..." The art is well aware of this term. In fact there is a Journal entitled "Nonwovens" addressed to practitioners in this field. In describing Figure 1, the interlayer is identified as made of a fabric (paragraph 0029), i.e., spunbonded fabric (paragraph 0029), a spunlaced fabric (paragraph 0030), a mesh fabric (paragraph 0031). Figure 2 which follows describes a composite of interlayers 6 made of thermoplastic fibers disposed between reinforcing layers 6...

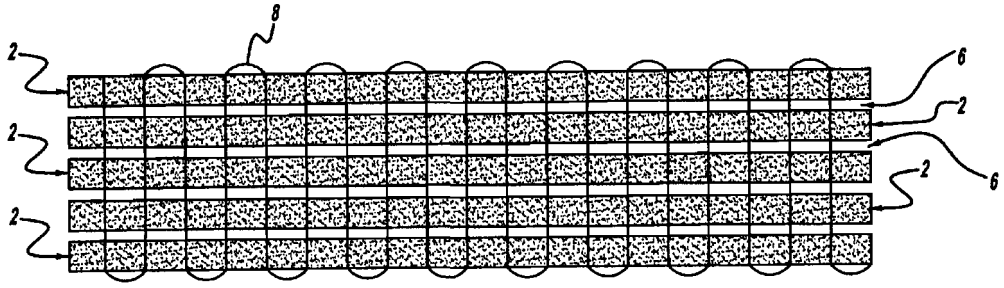

FIG - 2

There is no teaching in the reference to use glass fibers as taught by the applicants and to laminate them in a thermoplastic polyphenylsulfone resin as taught by the applicants.

The Examiner acknowledges that Tsotsis is silent with respect to specific glass fibers and now cites Gomez as showing that it is known in the resin-fiber composite article to use s-type or e-type glass fibers.

Gomez is directed to a process for forming a reinforced resin composite by coating continuous filament with a thermosetting mixture of a resin and a strain relieving

polymer. According to Gomez, the thermosetting more specifically comprises "i) a resin selected from the group consisting of unsaturated polyester resins, vinyl ester resins, and mixtures thereof; ii) a styrene monomer; and iii) a thermoplastic polymer (claim 1 of Gomez). It is the continuous filament which can be a glass fiber (more specifically identified at column 3, lines 28 et seq.) as recited by Gomez. The coated filaments are formed into the desired shape and the thermosetting mixture cured. The process and product are very different from those of Tsotsis and because of their nature would not suggest modifications to be made to the Tsotsis' highly porous interlays to toughen liquid molded fabric based composites.

The rejection under 35 U.S.C. 103 should be withdrawn and the claims in the application indicated as allowable.

Respectfully Submitted
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